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(71) Applicant

John Douglas Bryant  
89 Kirkdale, Sydenham, London, SE26 4BL,  
United Kingdom

(72) Inventor

John Douglas Bryant

(74) Agent and/or Address for Service

John Douglas Bryant  
89 Kirkdale, Sydenham, London, SE26 4BL,  
United Kingdom

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## (54) Virtual multimedia system

(57) A dedicated computer-based system encompassing in one unit all the hardware necessary to produce complete integrated multi-media productions incorporating music, speech, video, graphics, text and animation.

The system comprises a desk-top working surface 10 with rear supporting legs 20, two tower computer units 12 & 13 which also act as front supports for the desk-top working surface, electronic piano keyboard module 11, computer keyboard module 23, video effects generator module 21, foot control module 24, a spare module to accommodate graphics palette 22, two computer monitors 44 & 15, loudspeakers 18 and two stereo video tape recorders 16 & 17.

The control modules connect to the desk-top working surface 10 via discreet plug and socket connectors which are duplicated. The duplicated connectors allow the control modules to be moved when the piano keyboard is not in use.

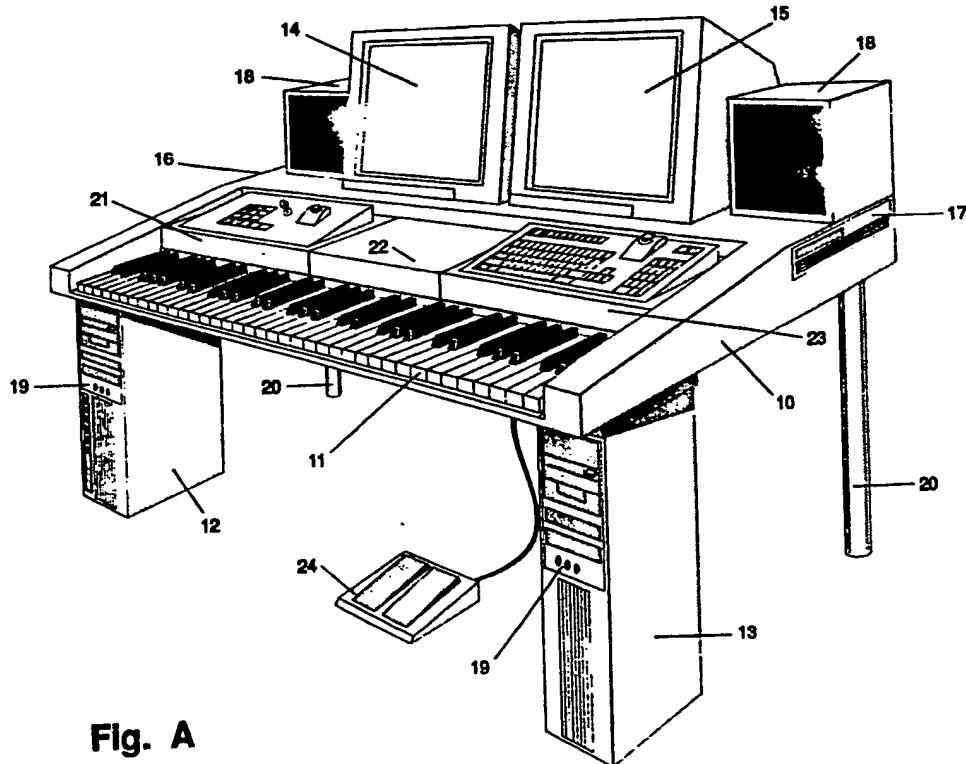


Fig. A

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Fig A

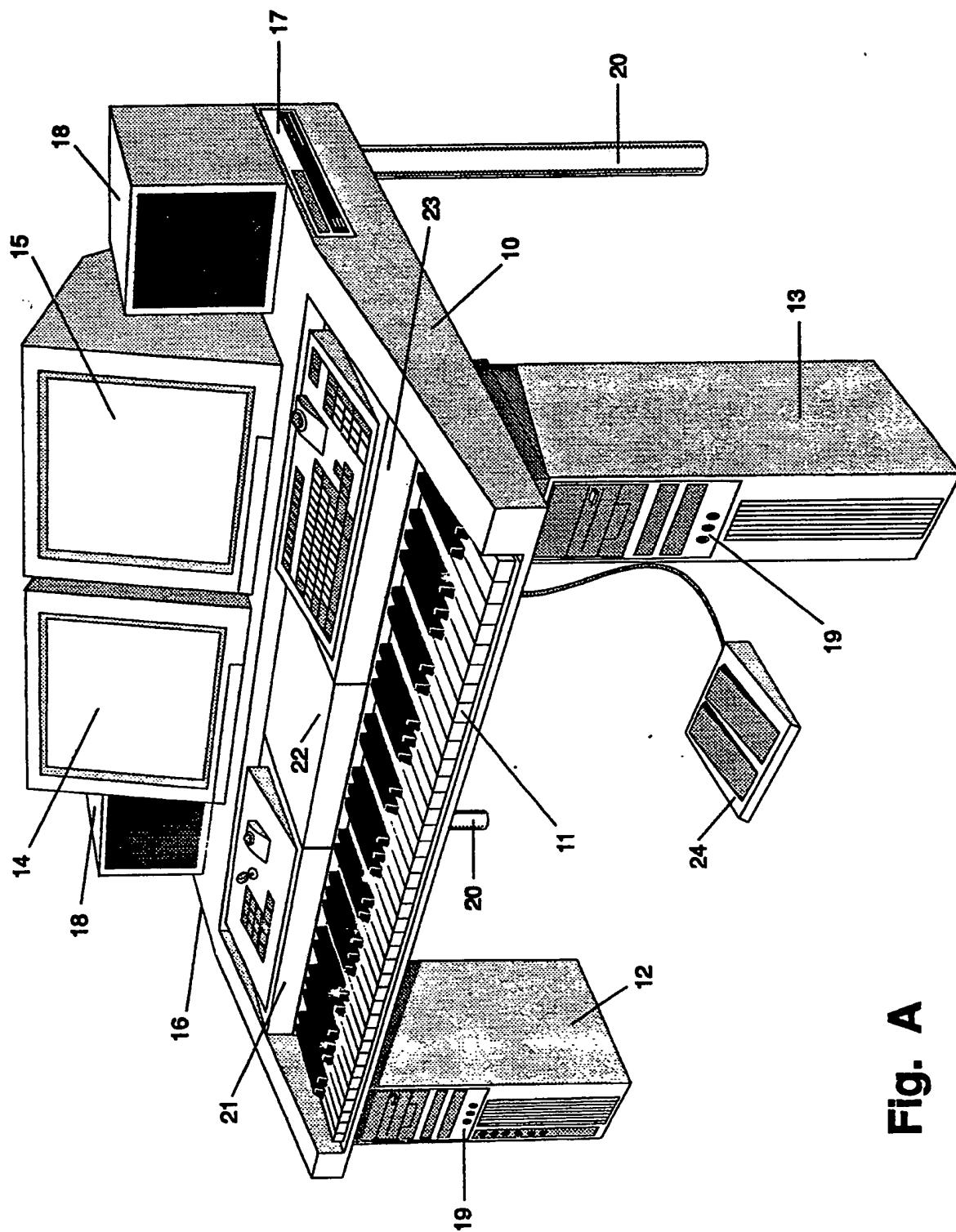
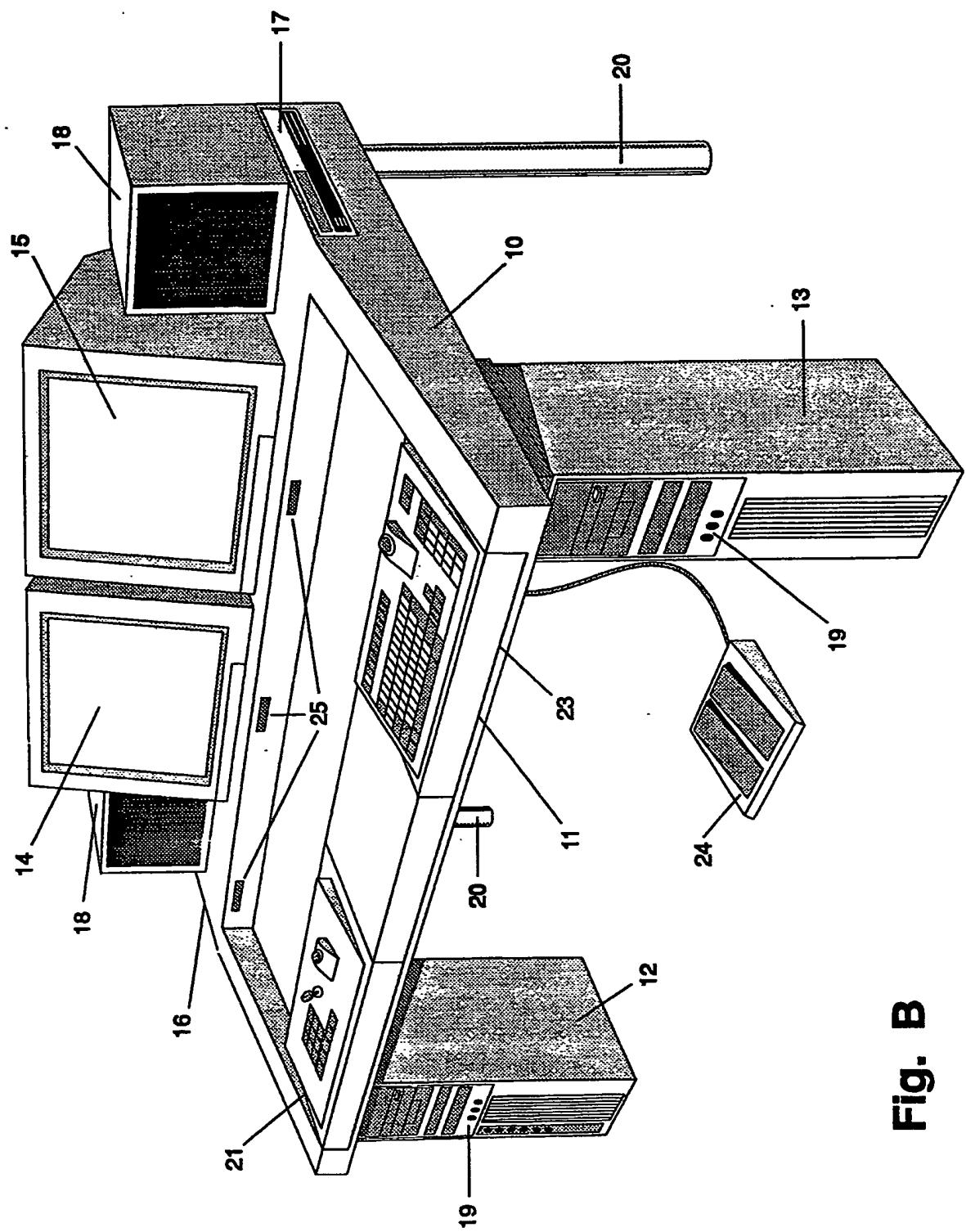


Fig. A

**Fig B**



**Fig. B**

Fig C

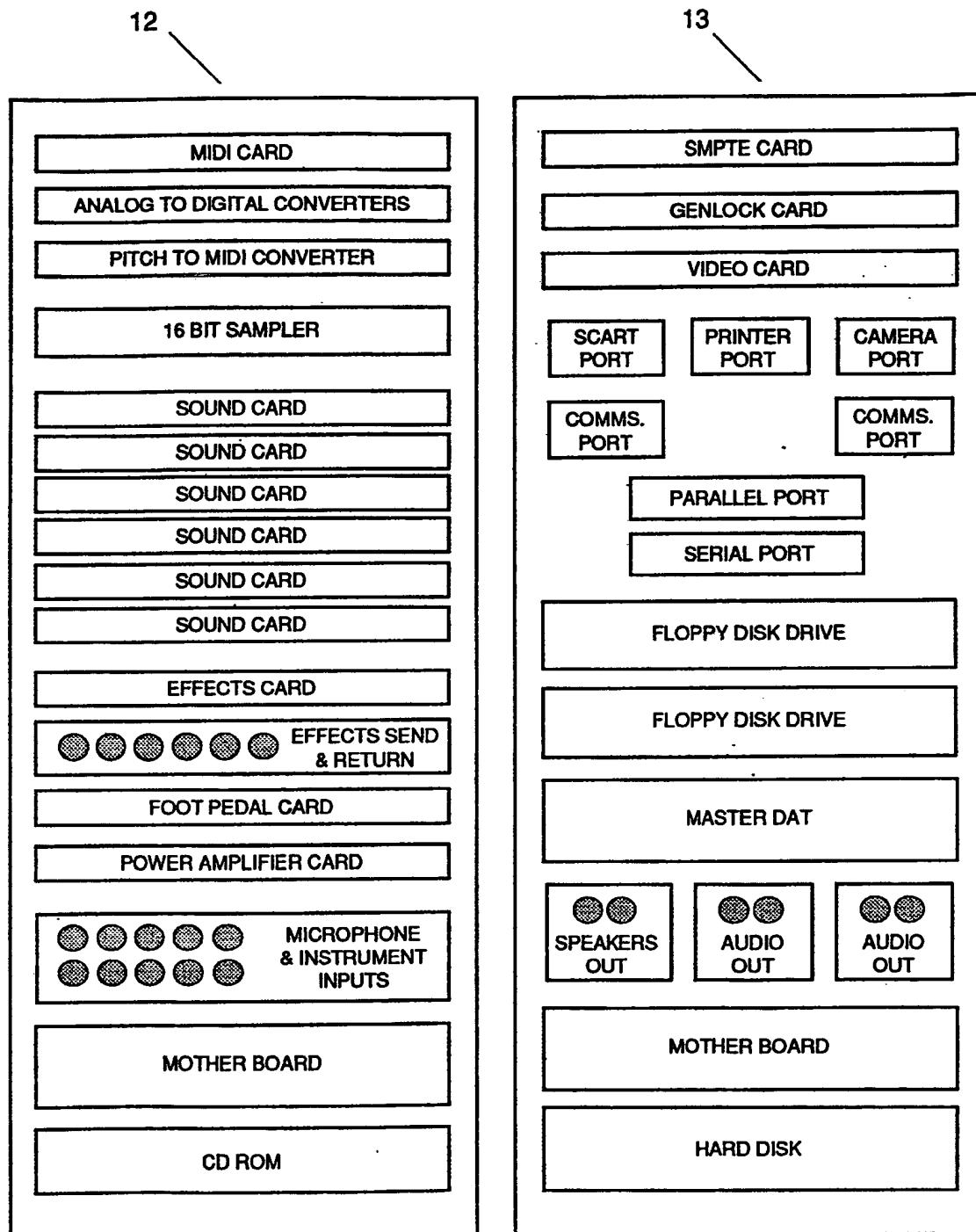
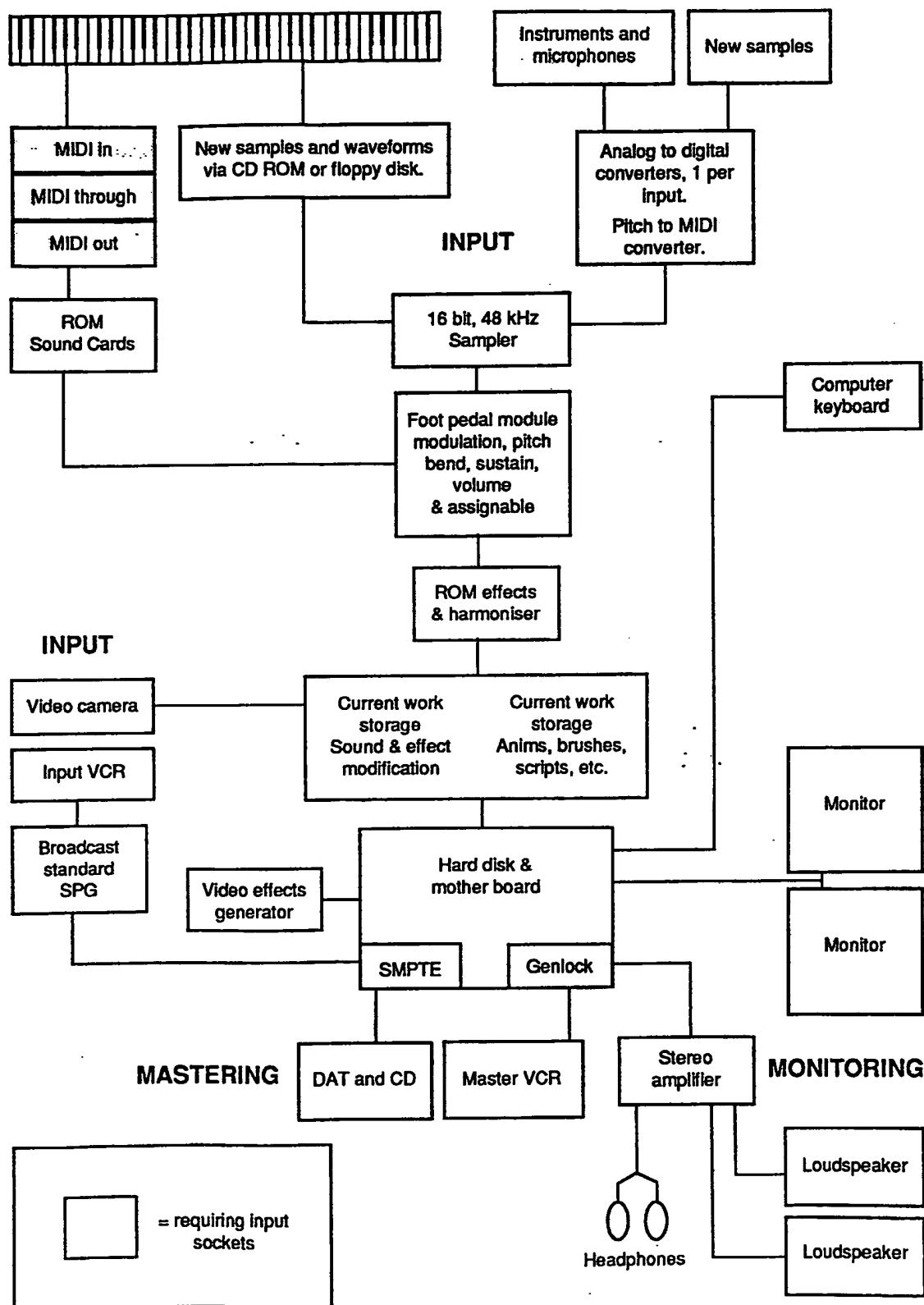
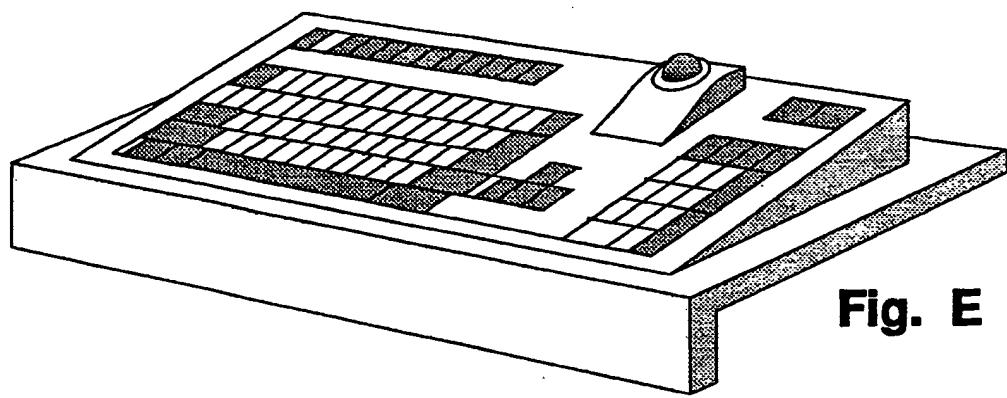
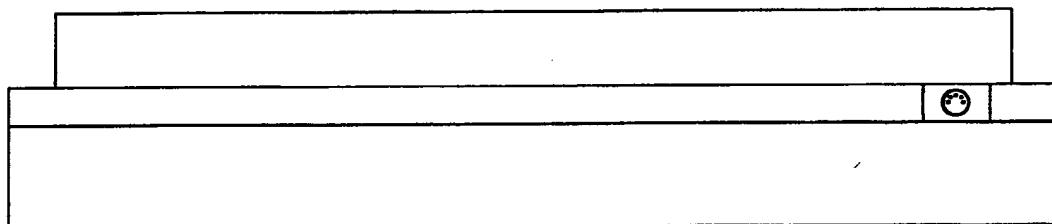


Fig D

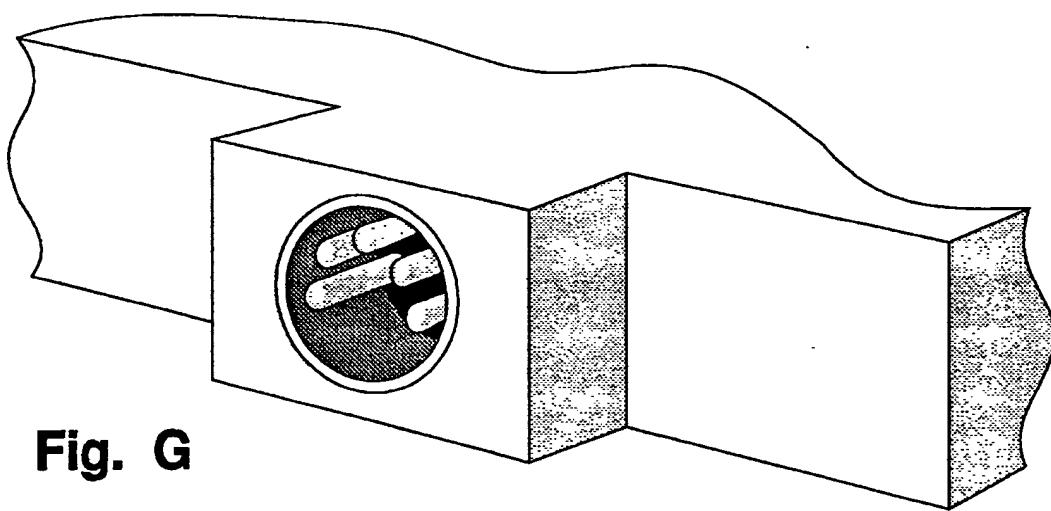




**Fig. E**



**Fig. F**



**Fig. G**

## VIRTUAL MULTIMEDIA SYSTEM

This invention relates to a dedicated computer-based system for the production of integrated music, audio-visual presentations, videos and animated films.

At present, the only method of producing multi-media integrated productions is to assemble various components as separate items and connect them together. The present method is expensive, requires technical expertise and specialist knowledge and requires a great deal of space.

The Virtual Multimedia System encompasses in one unit all the hardware necessary to complete a multi-media production including music, video, graphics, text and animation. Information storage facilities are contained within tower computer units which also function as supports for the working surface. The working surface (desk-top) consists of an electronic piano keyboard module, computer keyboard module, video effects controller and generator module and a spare module position.

The spare module position provides space for graphics palette module, customisation and future developments. The working surface also provides support for the computer monitors, video tape recorders and loudspeakers. The rear of the working surface is supported by legs.

Control devices such as computer keyboard, mouse, trackball, piano keyboard, foot control unit and video effects controller are of modular construction in order to allow replacement, upgrading and ease of service. The control modules connect to the working surface via discreet connectors which are duplicated to allow movement of modules.

Sampled sounds used for music production are stored in memory and may be constantly added to via various input facilities. There is provision for audio wave sampling of analogue sounds such as conventional musical instruments and human voice to be input and converted into digital information.

Internal hardware will provide for: the production of music and speech, sampling of new sounds, production of graphic images and text, production of live video, production of animation, editing and manipulation of sounds and images and integration of all the aforementioned media.

The system will be open-ended to allow for additions and expansion of hardware facilities and incorporation of software developments.

Figure A shows in perspective, the Virtual Multimedia System as is would be set up for the recording and production of music.

Figure B shows the system as it would be set up for video and animation production with the electronic piano keyboard covered by the control modules in their secondary positions.

Figure C illustrates the contents of the tower computer units.

Figure D illustrates the system flow and connections.

Figure E shows in perspective, the computer keyboard control module.

Figure F shows the control module rear view with male plug connector.

Figure G illustrates the male plug connector in detail.

Referring to the drawings **Fig. A**, **Fig. B**, **Fig. C**, **Fig. D**, **Fig. E**, **Fig. F** and **Fig. G**, the Virtual Multimedia System comprises:

A desk-top unit 10 with integral electronic piano keyboard module 11, which has piano-weighted keys and provides a programmable after-touch facility.

Two tower computer units 12 & 13 for information storage.

Two high-resolution colour computer monitors 14 & 15.

Two high-quality stereo video tape recorders 16 & 17.

Loudspeakers 18 and headphone 19 monitoring.

Rear supports 20.

Moveable control modules 21, 22 & 23.

Control modules 21, 22 and 23 connect to the desk-top unit 10 via discreet sockets 25 and plugs as illustrated in **Fig. F** and **Fig. G**. The control modules can be moved backwards and forwards to suit the current usage and keep the unit dust free when not in use. When the piano keyboard 11 is being used, the control modules are positioned on a shelf behind the keyboard as shown in **Fig. A**. When the piano keyboard is not in use, the control modules fit over the keyboard 11 to form a cover and make usage easier as shown in **Fig B**. The discreet sockets are duplicated so that the control modules are connected to the system in both positions.

The desk-top unit is wider than the piano keyboard and provides support for the computer monitors 14 & 15 and loudspeakers 18. Video tape recorders 16 & 17 are built into the desk-top working surface.

Connections to and from the tower computer units 12 & 13 are made via the desk-top unit 10.

The tower computer units 12 & 13 also act as front supporting legs.

The foot control module 24 is detachable to allow alternative configurations to be used. Standard configuration will allow control of modulation, pitch bend, volume, sustain, plus 1 assignable feature.

Video tape recorder 16 cannot be seen in **Fig. A**. It is built into the desk-top unit on the opposite side to video tape recorder 17.

The electronic piano keyboard is covered by the moveable control modules 21, 22 & 23 in **Fig. B**.

## INFORMATION STORAGE (SEE FIGURE C)

### TOWER UNITS 12 & 13

#### PRIMARY:

ROM accommodation of sampled and FM sounds ("sound cards").  
RAM for voice modification. Auto-transfer from ROM when selected.  
ROM preset effects.  
RAM for effect parameter modification. Auto-transfer from ROM when selected.  
ROM and RAM for storage of new samples and waveforms.  
CD ROM for input of new voices and sounds.  
Floppy disk drive for input of new sounds.  
Hard disk for sequencing software.  
RAM accommodation of anims, brushes, scripts and graphic images.  
Hard disk for graphics programs.  
Hard disk for animation programs.

#### INTERMEDIATE:

RAM for sounds and effects in current use.  
Removable hard disk for storage of current sounds and effects.  
RAM for graphics and animations in current use.

#### FINAL:

Mastering onto DAT and CD ROM.  
Hard disk.  
Stereo video tape recorder.

#### INPUTS:

Analogue to digital converters (1 per input). Pitch to MIDI converter.  
Inputs for instruments, microphones and Direct Injection boxes.  
Inputs for sampling from external equipment.  
2 x MIDI in, 2 x MIDI through and 4 x MIDI out.  
6 x Sockets for external effects send and return.  
Floppy disk drives for input of new sounds.  
Video camera input.

#### OUTPUTS

To headphones. To external effects send. To external reel-to-reel deck.  
To Loudspeakers. Audio outs. Scart, comms. x 2, printer, 2 x parallel and 2 x serial.

#### FACILITIES

1 hour of 16 bit, 48 KHz sampling, expandable to 2 hours.  
16 part multi-timbral "sound cards".  
64 note polyphony on each "sound card".

SMPTE time code.  
"BRIDGEBOARD" PC interface.  
Harmoniser.  
Software controlled MIDI routing.  
Genlock.  
Broadcast standard SPG.

## CLAIMS

- 1 A computer-based virtual multimedia system comprising moveable control modules mounted onto a desk-top working surface which is supported by two tower computer units at the front and legs at the rear and incorporating all the hardware necessary to produce and monitor complete integrated multi-media productions.
- 2 A virtual multimedia system as claimed in Claim 1 wherein control devices such as electronic piano keyboard, computer keyboard, mouse, trackball, foot control unit and video effects controller are of modular construction allowing replacement, upgrading and ease of service and connect to the working surface via discreet plug and socket connectors which are duplicated to allow movement of the modules.
- 3 A virtual multimedia system as claimed in Claim 1 or Claim 2 wherein sampled sounds including sound effects, conventional musical instruments and human voice which are used in multimedia productions are converted to digital information, stored in memory and constantly added to via various input facilities.
- 4 A virtual multimedia system as claimed in Claim 2 or Claim 3 wherein graphic images, text, live video footage, pre-recorded video footage and animation are generated, edited and integrated with music and speech to form complete films and presentations.
- 5 A virtual multimedia system as claimed in any preceding claim wherein a spare control module position is provided to allow for future developments.
- 6 A virtual multimedia system as claimed in any preceding claim wherein the desk-top working surface provides support for computer monitors, video tape recorders and loudspeakers.
- 7 A virtual multimedia system as described herein with reference to Figures A - G of the accompanying drawings.